Southern California Regional Strategy for Goods Movement

A Plan for Action

February 2005

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I. The Need: Goods Movement is a Challenge That Affects Everyone

Keeping freight moving through Southern California to the region and the rest of the nation has always been a challenge, but this is a particularly difficult time. In Fall 2004, container ships were lined up outside the San Pedro Bay ports, where a labor shortage slowed the offloading of goods arriving for the holiday shopping season. Intermodal yards in Los Angeles and San Bernardino counties have nearly reached their capacity to transfer containers from trucks to rail. Freight volumes are expected to at least double and maybe triple in the next two decades – and all recent projections have turned out to be underestimates.

Concurrent with all this demand is a rising tide of community pressure to reduce the traffic congestion and related public health impacts of goods movement. Facing criticism from air quality advocates, the Board of Harbor Commissioners of the Port of Long Beach recently rejected an environmental impact report for the Pier J expansion, and port staff estimates it will take a year to complete a more detailed analysis. New studies have associated impaired lung growth in children with air pollution arising from mobile sources such as trucks.

The economic health of the region, state, and nation is also at stake, as is economic opportunity for all the region's inhabitants. The logistics industry provides critical job opportunities, particularly for those with limited formal education. As a group, the logistics sectors pay better than either construction or manufacturing. They provide competitive entry-level pay and defined skill ladders that enable workers to move to higher incomes by on-the-job learning and experience. In this respect, they offer these workers access to the kinds of career paths lost with the demise of traditional manufacturing. Failure to resolve the infrastructure and environmental issues will result in slower growth and inevitable job losses throughout the economy.

At root, this is an issue of global competitiveness for the region, the state, and the nation. Southern California is a global gateway for freight, but it receives more of the burdens and fewer of the benefits than it should. With public funding in short supply, however, we must also face the reality that public-private partnerships will be the cornerstone of any realistic plan of finance.

II. Fundamental Principles and Strategies the Region Has Agreed to Follow

One-third of all waterborne freight container traffic at U.S. ports is handled by the Ports of Los Angeles and Long Beach.[1] Fifty to seventy percent of the freight coming into these two ports is headed for destinations outside the region.[2] Since Southern California supplies goods to the entire nation, a close partnership with the federal government is needed. This theme is reflected in the following principles, which the region's transportation agencies and goods movement system operators have proposed to guide the effort to improve the regional goods movement system.

Principle 1) Environmental and community impact mitigation must be integral to the goods movement program.

- There must be a stronger federal-state partnership to reduce emissions from trucks, ships, trains, and other sources outside local jurisdiction.
- The Governor should work with the President to regulate emissions from foreign-registry vessels via treaty ratification and other international actions. Specifically, the Governor should advocate for the U.S. Senate's ratification of MARPOL Annex VI relating to the control of emissions from ships and for the International Maritime Organization's (IMO) adoption of a Sulfur Emission Control Area (SECA) for U.S. coastal waters.
- The Governor should promptly implement his commitment to direct the California Environmental Protection Agency and California Air Resources Board (CARB) to develop an innovative program to reduce air pollution from the ports, with measurable benchmarks.
- Other community impacts, such as noise, congestion, and visual blight, should be addressed in the environmental review process. This review should be facilitated through coordination among the federal and state agencies involved and should entail a meaningful process for public involvement. The Governor can support this effort by fostering coordination among the state agencies, as the White House is doing at the federal level.
- Establishing a process for community involvement and input as part of the environmental review can help the region identify cost-effective, near-term ways to mitigate local impacts of goods movement.

[1] Port statistics for 2003 from the American Association of Port Authorities, http://www.aapa-ports.org/industryinfo/statistics.htm.

[2] Estimates from Port of Long Beach and from SCAG study on elasticity of port demand, in progress, Spring 2005.

Principle 2) Improvements to the goods movement system should not come at the expense of other transportation system investments.

- Other sources of public and private funds must be tapped (homeland security, environmental protection, defense funds, user fees, and growth in customs fees, among others).
- Both the Federal and State governments must act to support innovative procurement and public-private funding mechanisms.

Principle 3) Investments in the regional goods movement system should be made to realize regional benefits that have statewide implications.

- Performance Benefits

  The performance-based approach to evaluating transportation investments has shown specific performance benefits. For example, analysis of a proposed dedicated truckway on State Route 60 showed a reduction of more than 50 million vehicle hours of delay annually and a return of $5.92 for every dollar invested in the project. Similarly, a dedicated truckway on Interstate 710 connecting the Ports of Los Angeles and Long Beach to State Route 60 near downtown Los Angeles could reduce over 36 million vehicle hours of delay annually and generate a return of $4.66 for every dollar invested. These dollar returns include savings from reduced delay, accident reduction, reduced vehicle operating costs, and air quality benefits. They show how specific investments in truckways, for example, can have benefits for both trucks and all other users of the transportation system.

  On the freight rail side, the Alameda Corridor project has reduced emissions from idling cars and trucks by 54 percent and cut travel time to 45 minutes from two hours. The Alameda Corridor East and other grade separation projects seek to extend these benefits regionwide.

- Environmental Benefits

  The 2004 Regional Transportation Plan (RTP) explores market-based strategies that can mitigate congestion and associated emissions while accommodating expected increases in trade activity. For instance, user-supported dedicated facilities for goods movement could help bolster the economy, improve safety, relieve congestion, and, if implemented with clean technologies, help improve air quality at the ports, throughout Southern California, and beyond.

  Air quality mitigation must be fully integrated into the goods movement system improvements. Substantial air quality benefits can be realized by accelerating fleet modernization and retrofitting trucks, ships, and trains with cleaner technologies. Investment in modernizing and retrofitting the goods movement fleet, depending on mode, may be a cost-effective method to reduce emissions of particulate matter (PM) and smog-forming nitrogen oxides (NOx). For example, an investment of approximately $300 million a year for the next five years could potentially remove the 50,000 dirtiest diesel trucks from Southern California, which would achieve a 50% reduction of NOx and an 80% reduction in PM emissions from these trucks. Retrofitting locomotives, marine vessels, and diesel equipment could also provide a cost-effective investment to reduce NOx and PM emissions.

Of the roughly 33 tons of NOx that cargo ships emit at the two ports each day, about 40% are emitted from ships while they are docked. Thus the potential benefits for retrofitting ships and the port facilities to permit alternative maritime power (such as cold-ironing) are substantial. It is estimated that the costs of installing the dockside infrastructure might range from $750,000 to $5 million per berth, and the costs of retrofitting ships might range from $200,000 to $1 million. Vessel speed reduction programs can further reduce emissions from cargo ships and provide substantial fuel consumption and fuel cost savings.

- Economic Benefits

The freight logistics industry – wholesale trade, warehousing, and transportation sectors – represents over 8 percent of the Southern California Association of Governments (SCAG) region's total employment, or 611,000 jobs in 2003.[3] Since 1990, the logistics industry has contributed more than 12 percent of total job growth in the region. SCAG's projection shows that the industry will almost double its employment size by 2030, to reach over 1,000,000 jobs and account for almost 10 percent of regional employment.

Moreover, over a quarter million manufacturing jobs directly related to merchandise exports are supported by the logistics infrastructure. The logistics industry also pays well: its average weekly pay – $847 in 2003 – is more than two times the pay in the leisure and hospitality sectors ($400/week), and is even higher than average weekly pay in manufacturing ($843).

Economic impacts from $20 billion worth of investments in the regional goods movement system estimated using the IMPLAN[4] model are presented in Table 1. It should be noted that the estimates shown here result from just two facets of the investments: construction impacts, and the follow-on effects of the projects on the efficiency of the region's goods movement system. Other

[3] This is a conservative estimate in that it does not include transportation and warehousing functions performed in-house by many businesses.
[4] The SCAG IMPLAN Input-Output Model (developed by Minnesota IMPLAN Group, Inc.) is a PC-based economic impact assessment modeling system, which can estimate a full range of economic impacts through inter-industrial interactions and household activities.

benefits, such as air quality, health benefits, and system-wide reductions in congestion delay attributable to these projects are not included in the estimates. Moreover, the economic benefits from investments of this magnitude will not be confined to the SCAG region; positive state and national economic impacts will also be generated.

As indicated in Table 1 on the following page, the region is expected to gain a total of almost 277,000 jobs during the construction phase of the goods movement infrastructure projects (between now and 2015). Total wage and salary income from these construction-related jobs will be almost $9.5 billion, with average wages ranging between 12 and 28 percent higher than existing average salaries paid per job, depending on where the investment is made in the region. It is estimated that the projects will generate over $2 billion in federal, state and local tax receipts, with the local and state government share estimated at $520 million through 2015. Converting these figures to present values using a discount rate of 5% yields a total of close to $7 billion for wage and salary income and $1.6 billion of total tax receipts between now and 2015.

The goods movement projects' impacts on the logistics industry and on the overall economy due to a more efficient transportation system will start to phase in beginning in 2010 (as some projects begin operation) and become fully effective in 2015, when all projects are assumed to be completed. Using a 30-year planning period starting in 2005 and a discount rate of 5%, the present value of total federal, state, and local tax receipts from these additional growth impacts amounts to over $16 billion between 2010 and 2035.

The present value of total tax revenues from the construction phase and from the additional jobs and income resulting from efficiency improvement of the goods movement system are estimated at $17.6 billion in federal, state, and local tax revenue over the 30-year period.

Table 1. Overall Economic Impacts of Regional Goods Movement Initiatives[5]

OVERALL ECONOMIC IMPACTS OF THE REGIONAL GOODS MOVEMENT INITIATIVE

	Goods Movement Infrastructure Initiative					
				Tax Impacts from Construction		
	Total Investment	Job Impacts from Construction*	Total Personal Income Impacts	Federal Tax Receipts	State & Local tax Receipts	Total Tax Receipts
Truckway	$16,533	227,040	$7,757	$1,326	$426	$1,752
Rail Investment	$3,400	49,876	$1,704	$291	$94	$385
Total in 2005 Constant Dollar	$19,933	n.a.	$9,462	$1,617	$520	$2,137
Total in Present Value@	$14,635	n.a.	$6,958	$1,189	$382	$1,572
Total Job Impacts	n.a.	276,915	n.a.	n.a.	n.a.	n.a.

	Additional Growth in Logistics & Economy*					
				Tax Impacts from Additional Growth		
	Total Investment	Job Impacts+: Logistics & Overall Economy	Total Personal Income Impacts	Federal# Tax Receipts	State# & Local tax Receipts	Total# Tax Receipts
Truckway	n.a.	95,025	n.a.	n.a.	n.a.	n.a.
Rail Investment	n.a.	82,725	n.a.	n.a.	n.a.	n.a.
Total in 2005 Constant Dollar	n.a.	n.a.	$252,407	$30,173	$9,716	$39,889
Total in Present Value@	n.a.	n.a.	$101,517	$12,135	$3,908	$16,043
Total Job Impacts	n.a.	177,750	n.a.	n.a.	n.a.	n.a.

	Total					
				Total Tax Impacts		
	Total Investment	Total Job Impacts	Total Personal Income Impacts	Federal Tax Receipts	State & Local tax Receipts	Total Tax Receipts
Truckway	$16,533	322,065	$7,757	$1,326	$426	$1,752
Rail Investment	$3,400	132,601	$1,704	$291	$94	$385
Total in 2005 Constant Dollar	$19,933	n.a.	$261,868	$31,790	$10,236	$42,026
Total in Present Value@	$14,635	n.a.	$108,475	$13,324	$4,290	$17,615
Total Job Impacts	n.a.	454,665	n.a.	n.a.	n.a.	n.a.

* Investment starts in 2006 and is completed by 2015.

\+ Growth and job gains in Logistics Industry and overall economy, above projected trend growth, as results of more efficient goods movement system. The job impacts will start to phase in from 2010 and become fully effective in 2015 as all projects completed.

\# Projected total tax impacts from additional 177,750 jobs from 2015 to 2035.

@ Discount Rate: 5%

[5] Based upon $20 billion invested between now and 2020. Impacts are for project construction only.

Principle 4) *Funding of these investments must begin now because many key projects will take years to deliver. Without action, congestion will worsen.*

Projects that can begin delivering benefits in the near term must be driven to rapid completion, while implementation of longer-term projects should start as soon as possible. Operating efficiency improvements should be implemented as soon as possible to get the most out of existing infrastructure.

Principle 5) *Without leadership and collective action at the state and national level, we will not be able to realize these benefits.*

- The Governor should support legislation to provide for innovative project procurement and financing.
- The Governor should work with the U.S. Secretary of Transportation and Congress to support specific elements of pending federal legislation beneficial to goods movement (i.e., the National Corridor Infrastructure Improvement Program, Freight Intermodal Connectors, and Projects of National and Regional Significance).
- The Governor should require state agencies to coordinate environmental review procedures[6] and should seek White House approval to include this initiative on the President's list of priority transportation projects for coordinated decision-making across federal agencies.[7]
- The Governor and regional stakeholders should work with the new U.S. Department of Transportation Southern California Gateway office in Long Beach on local implementation of new national and state policies.

III. How the Goods Move Today

Goods move into, out of, and within Southern California via a complex system of transportation facilities and agencies. This system links the region to the rest of the state and to the nation, helping to sustain the region's economy and contributing to our quality of life.

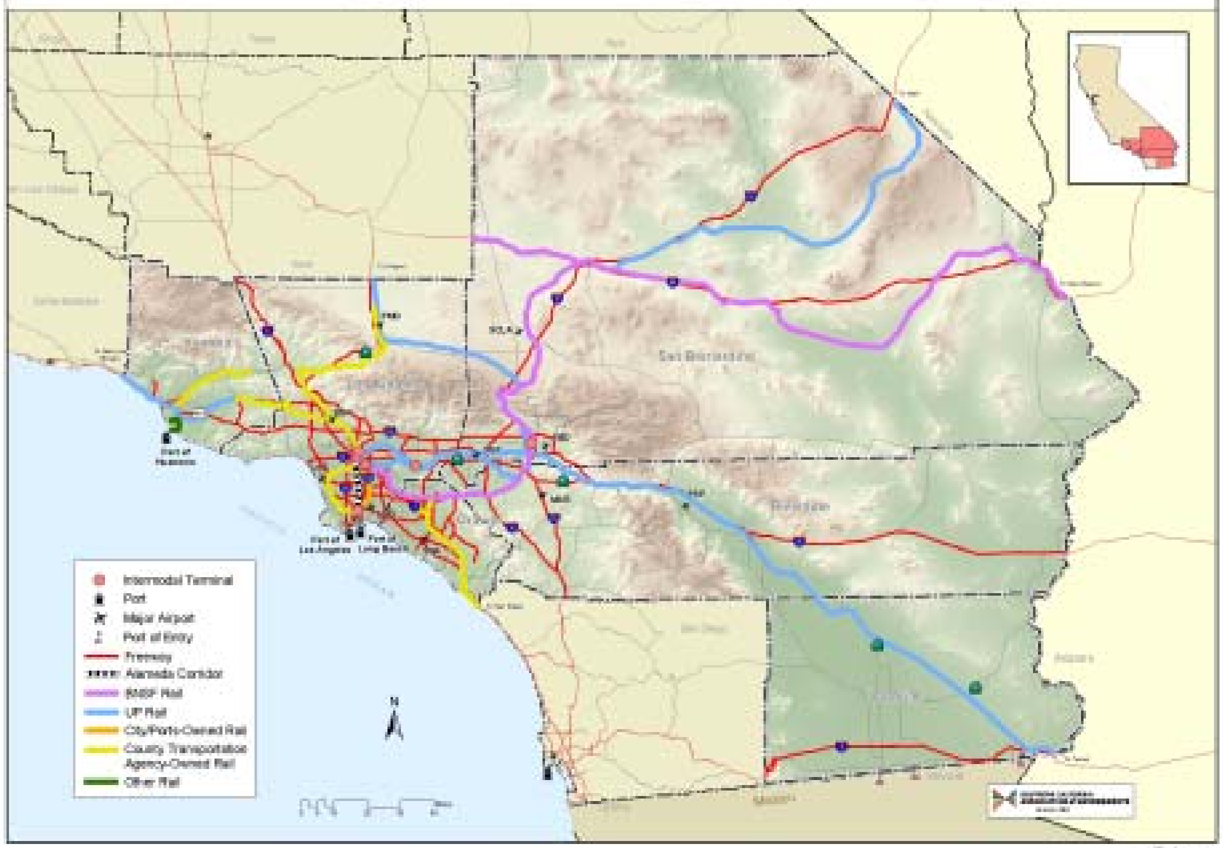
The regional goods movement system[8] includes three seaports (Los Angeles, Long Beach, and Hueneme), three ports of entry (POE) along the Imperial County border with Mexico, several commercial airports actively handling cargo, six rail intermodal yards – five in Los Angeles County and one in San Bernardino County – and a growing array of trucking and

[6] In order to implement this, we need a responsible state agency or other institution to function as the lead agency.
[7] President Bush's 2002 Executive Order 13274 instructs DOT to select priority transportation projects for a coordinated environmental decision-making process. See http://www.fhwa.dot.gov/stewardshipeo/index.htm for more information.
[8] The geographic scope of this paper is the SCAG region, which includes the Counties of Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura.

distribution centers, warehouses, manufacturing and retailing venues. Within the region, goods travel to and between these points via eight railroad mainlines, additional branch lines, and four short line railroads, as well as by the region's freeways and many arterial and local streets.

Map 1 shows the existing regional goods movement system.

Map 1. Existing Goods Movement System in the SCAG Region



IV. A Unified Goods Movement System Solution, and How to Pay for It[9]

It is clear that substantial investment will be needed to provide the infrastructure to carry goods to and through Southern California safely, quickly, with minimal local cost and with maximum local economic benefit. This need arises at a time when public funds are extremely limited. SCAG and its member counties are working with Sacramento and Washington to direct a more equitable share of transportation funding to the region relative to the value we now contribute to other parts of the country. The region annually develops a Consensus Program to communicate its needs to Washington with a unified voice.

The transportation agencies, railroads, ports, and other operators of the region's goods movement system have been working together for some time to address the growing demand. Section V of this paper provides further details about the short- and long-term operational and infrastructure changes under way in the region.

A consensus is emerging on the specific projects and investments that are needed in the region to keep freight moving, mitigate environmental and community impacts, and avoid the loss of job and tax revenue growth. Table 2 on the next page is an unprioritized list of examples of major projects that are currently understood to be needed over the next ten years, with a total cost that approaches $30 billion. As the regional understanding of needs evolves, this list will be refined over time.

[9] Further detail is being developed on the finance mechanisms for goods movement improvements including a discussion of tax credit bonds at the state or federal level and other financial mechanisms as appropriate.

Table 2. Southern California Regional Goods Movement System: Potential Needs[a]

Project	Tentative Total Cost ($Millions)
Alameda Corridor East	$2,500
Colton Rail Grade Separation	$90
Rail Capacity Improvements (all counties, includes mitigation measures)[b]	$3,400
Near-Dock Intermodal Facility, LA/LB[c]	TBD
New Rail San Fernando to Antelope Valley[c]	TBD
Port/Rail Intermodal Access, Ventura	$18
Santa Paula Branch Line from Santa Clarita to Port Hueneme[c]	TBD
Shuttle Train Inland Terminal[c]	TBD
Rail/Grade Separation Subtotal	***$6,008***
SR-57 Truck Climbing Lane	$68
SR-91 Truck Storage Lane	$5
SR-115 Improvements	$76
I-15 Truckway	$10,100
East-West Corridor[d]	$4,300
I-5 Truckway[c,d]	TBD
I-710 Corridor/Gerald Desmond Bridge Gateway Program • Gerald Desmond Bridge • I-710 Corridor[e]	 $605 $4,500
SR-78/Brawley Bypass[f]	$108
SR-47 Improvements	$420
110 Freeway/SR-47/Vincent Thomas Br.	$23
Highway/Other Subtotal	***$20,205***
Grand Total	**$26,213**

Notes:

a) Costs reflect current dollar estimates—not adjusted for inflation.

b) Costs associated with surface traffic and other mitigation measures may be greater than current cost estimates reflected in the ACE total. Accordingly, additional mitigation needs are accounted for in this rail capacity improvement total.

c) These projects have been identified since the adoption of the financially constrained 2004 RTP. Costs still need to be determined for these projects.

d) Route and scope may change depending on the results of the Multi-County Goods Movement Action Plan (see Section V).

e) The $4.5 billion cost estimate is based upon more recent corridor analyses/studies assuming a broader project scope than what is currently reflected in the 2004 RTP at $2.2 billion.

f) Costs reflect total project costs even though phases may be programmed in the current TIP.

Members of Southern California's congressional delegation have requested $745 and $900 million in funding for the I-710/Desmond Program and Alameda Corridor East, respectively, as Projects of National and Regional Significance under the reauthorization of the Transportation Equity Act for the 21st Century. Clearly, these requests are only first steps towards meeting the regional needs outlined above. Map 2 shows the regional goods movement system as it would look with these investments. (The map does not include projects whose precise locations are not yet known.)

Map 2. Needed Additions to the Goods Movement System

* Regarding I-5, route and scope may change depending on the results of the Multi-County Goods Movement Action Plan.

Again, given current limits on local and state finances, innovative methods will be needed to procure and pay for these system improvements. Policy makers have the responsibility to enhance innovative financing opportunities so that public funds can better support critical goods movement projects that contribute to the national economy, local communities, and the environment. Accordingly, regional goods movement financing recommendations include the expansion of existing federal credit enhancement programs and the establishment of tax incentives to facilitate public-private partnerships – in conjunction with user/beneficiary fees and more efficient procurement arrangements, as briefly outlined below:

a) **Transportation Infrastructure Finance and Innovation Act of 1998 (TIFIA)** – The TIFIA program provides direct federal loans, loan guarantees, and standby lines of credit to large projects of national significance. The program must be expanded to include broader eligibility provisions for application to goods movement projects including privately owned freight rail infrastructure. Further, access to TIFIA credit enhancement tools must be facilitated by establishing a pre-TIFIA equity infusion or "pipeline" program whereby federal assistance in the form of direct grants are provided to advance projects to at least 30 percent design – covering early stage development phase activities, which often present substantial risks and challenges for private sector partners. Accordingly, federal assistance targeted during this initial development phase can induce private sector co-investment and further bridge the gap for accessing already existing innovative financing mechanisms.

b) **Tax-exempt private activity bonds for goods movement facilities** – State and local governments currently utilize the most common method of borrowing to support the development of infrastructure by issuing municipal bonds – backed by dedicated revenue streams. Municipal bonds are interest bearing obligations issued by state or local governments to finance public facilities. The interest paid to investors is exempt from federal income tax and sometimes state income tax, providing considerable savings to borrowers/project sponsors – approximately a 20-25% interest saving in present value terms. Access to the tax-exempt municipal bond market has been critical in serving as a form of federal assistance to states and localities for investment in infrastructure. However, the issuance of tax-exempt bonds is subject to a complex set of federal regulations and restrictions, particularly when the project being financed involve private sector participation – then considered private activity financing. Federal assistance programs, however, must be targeted to encourage public-private partnerships in the development of goods movement facilities that generates economic returns as well as spillover public benefits (safety, mobility, air quality, and national security). Federal programs must encourage projects that have revenue-generating ability and private sector co-investment.

c) **Tax-credit bonds for goods movement facilities**[10] – Tax credit bonds currently in existence include Qualified Zone Academy Bonds (QZABs) to finance improvements in public schools located in disadvantaged areas. These instruments effectively offer zero interest cost borrowing, representing more than 50% saving in present value terms to borrowers/project sponsors – indeed, a substantially deeper subsidy than even tax-exempt bonds could provide. Similar to the existing QZAB program, the proposed tax credit bond pilot program for freight infrastructure development would be structured more generally as follows:

- Project sponsors would be responsible for only the principal portion of the debt (backed by project generated revenues).
- Project sponsors would establish a sinking fund deposit and collect investment earnings to repay the principal at maturity (20 years).
- The U.S. Treasury would pay the "interest" portion of the debt through taxable federal income tax credits.
- Tax credits may be decoupled – stripped such that the principal and credit components can be sold separately, improving market efficiency and expanding buyers base to pension funds and individual investors.
- Tax credits may be transferred through sale and repurchase agreements.

[10] The Multi-County Goods Movement Action Plan (see Section V) proposes that this issue needs to be reviewed and resolved at the State level.

d) **Tax Credit Equity** – Another strategy being considered includes the use of tax credit equity financing whereby investors would contribute up-front capital to fund a portion of the project costs, and in turn receive annual tax credit, plus principal at maturity. The project sponsor, on the other hand, would make matching contributions. Tax credit equity financing could be structured similarly to the New Markets Tax Credit program – which was established by the Community Renewal Tax Relief Act of 2000 to stimulate equity investment in the economic development of low-income communities – for commercial and mixed use facilities.

e) **User/Beneficiary Fees** – The use of any of the aforementioned federal credit enhancement and/or tax incentive programs must be targeted for projects that have revenue-generating ability and/or a form of user/beneficiary fee component to pay back the principal associated with construction as well as mitigation needs. The proposed business model approach would enable private sector partners to address their capital improvement needs with lower-cost federal financing instruments while also addressing mitigation measures necessary to accommodate growth in freight traffic through local communities.

f) **Innovative Procurement Arrangements/Project Delivery Systems** – Project delivery systems are defined by the development process and procurement methods utilized to implement projects in a timely and cost-effective manner. Innovative methods to project delivery include design-build (and further variations such as design-build-operate, design-build-operate-transfer, and design-build-transfer-operate). Each option provides advantages depending on the project. Essentially, the design-build method further facilitates the project development process by forging the designer and builder into a single contract to provide design and construction services and transfer the construction risk from the public agency. This method condenses the project timeline by compressing the delivery process from two distinct phases into one. Employing innovative project delivery methods can accelerate project completion, which in turn results in cost-savings.

   Under California law, the construction portion of most public works contracts must be awarded on a least-cost basis. Accordingly, only transit agencies and selected local jurisdictions have the requisite statutory authorizations to employ innovative project delivery methods such as design-build. Moreover, a few large projects in California have utilized innovative project delivery methods by seeking special legislative authority. In order to facilitate a public-private partnership framework, innovative procurement/project delivery systems must be authorized.

g) **U.S. Customs Duties** – According to the financial statements of U.S. Customs and Border Protection in fiscal year 2003, almost $5.5 billion was collected in duties in the Los Angeles port district for goods that were imported into and exported from the United States. This represents 20% of all the duties collected at all U.S. ports of entry. Most of this money is deposited into the Treasury to fund other federal agency programs. A portion of this money could be used to fund infrastructure improvements that support the efficient flow of imported and exported goods in the Los Angeles area.

Homeland security is of particular concern to the region's goods movement system, in particular its ports. The U.S. Coast Guard and Customs agents currently conduct the majority of security inspections of incoming vessels, giving priority to the most hazardous cargo based on vessel origins and other intelligence. The Ports of Los Angeles and Long Beach estimate that they would need $250 million over five years to make needed security improvements, but nationwide federal grant funding for this purpose was only $150 million last year. Given Southern California's contributions to national commerce, clearly the region deserves a larger share of available federal funding. The region and state must work together to support the White House's request to Congress for additional homeland security funding.

Traditional grant programs alone cannot provide all the needed resources to efficiently deliver critical projects in the SCAG region. There must be greater incentives and flexibility in the use of debt and equity financing for goods movement projects capable of generating creditworthy revenue streams and providing substantial economic benefits beyond the local parameters of the project. Concurrently, efficient procurement/project delivery systems must be utilized to fully realize public benefits.

V. How We Are Improving the Goods Movement System Currently

Southern California has taken many steps to keep goods moving through the region. One of the most noteworthy accomplishments is the Alameda Corridor, a freight rail "expressway" completed in 2002 between the ports and the transcontinental rail network in downtown Los Angeles that speeds freight through in less than half the previous time and in an environmentally friendly manner. The state and regional transportation agencies have financed and implemented highway improvements to facilitate goods movement and reduce highway congestion. Similarly, the Ports of Los Angeles and Long Beach have spent close to $800 million over the last six years for on-dock rail facilities and regionally significant highway improvements.

In recognition of the immediate pressures in the region, many additional initiatives are already under way. These efforts range from privately initiated operational changes at the San Pedro Bay ports to public infrastructure projects on inland freeways. The 2004 Regional Transportation Improvement Program (RTIP), for example, contains $2 billion in goods-movement-related projects that are slated to start within the next six years.

The five County Transportation Commissions in the SCAG region (Los Angeles, Orange, Riverside, San Bernardino, and Ventura) are working with SCAG and the four Caltrans districts (7, 8, 11, and 12) on a 2-year project to develop an implementation plan for the Southern California goods movement system. The mission of this Multi-County Goods Movement Action Plan effort, which is administratively led by LA County MTA, is to partner with the private sector in the development of a strategy and implementation plan for an improved regional goods movement system that will consider and, as appropriate, include all of the actions described below. The effort has already begun to involve all of the region's goods movement stakeholders, and will continue to do so.

The following sections briefly describe three categories of initiatives:

- Operating enhancements
- Environmental mitigations/enhancements, and
- System/physical enhancements.

Each category includes both short-term actions – generally, those that will have an effect immediately, or within about the next five years – and longer-term actions. These initiatives demonstrate accountability by following the state's preferred hierarchy of transportation system actions: from preserving and improving the performance of the existing system, through the use of technology to improve operations and reduce impacts, to the last-resort of capital expenditure on system expansion. Even with the current operational and technology initiatives, there is no question that substantial investments in system expansion are needed for the Southern California goods movement system.

Operating Enhancements

The following operational initiatives are essentially all short-term strategies. *It is critical to understand that even if all these strategies are successful, they will get us through only the next five years.* Thus, the region must work now to develop plans and funding sources for longer-term efforts.

a) **Extended San Pedro Bay Port Gate Hours ("PierPass") –** Although 18-20% of the current marine terminal gate volumes move during off-peak hours, most containers enter or exit terminals during the day shift from 8:00 a.m. to 5:00 p.m. Terminal operators at the Ports of Los Angeles and Long Beach have developed a plan to introduce five additional off-peak shifts per week at all 13 terminals. The goal is to make better use of available roadway capacity at night and on the weekend and try to shift 40% or more to off-peak hours. PierPass, Inc. is a special purpose entity created to administer the program.

   Starting at the end of the first quarter 2005, PierPass will collect a container fee (initially set at $20 per twenty-foot equivalent unit or TEU) from importers/exporters or their agents. A refund will be given for containers that use off-peak gates (defined as the night shift from 5:00 p.m. to 3:00 a.m. and weekends). The following movements will be exempt from the fee: domestic transshipments (containers transferred from one ship to another in domestic trade), empty containers, chassis, domestic cargo (including Hawaii and Guam), and those containers subject to the Alameda Corridor Transportation Authority (ACTA) fees. A recent survey by ACTA of warehouse and distribution center operators indicates willingness to extend their own operating hours to meet the ports' extended gate operations.

   Marine terminal operators developed the PierPass program in response to AB 2041 submitted by Assemblymember Alan Lowenthal in the 2004 legislative session. The bill would have imposed a fee on daytime gate moves, but the Assemblymember agreed to withdraw the bill after the industry developed its own plan.

b) **Addition of Labor at the Region's Ports** – In the summer of 2004, the Pacific Maritime Association reached agreement with the International Longshore and Warehouse Union to hire 3,000 additional "casual" (non-registered) workers to alleviate a labor shortage at the two **San Pedro Bay** ports. Since September over 3,000 new casuals have been trained and certified. An additional 2,000 existing "casual" workers have also been promoted into the registered ranks of the union. This brings the total number of regular and casual workers up to over 12,000 members, with the plan to increase the membership to close to 15,000 within a year. Additional labor is also being sought at Port Hueneme.

c) **Virtual Container Yard –** A "virtual" container yard (VCY) would be an Internet-based matching service for empty containers. A local import container load is transported by truck to a warehouse or distribution center. Once that container is unloaded it is typically hauled back empty to the port terminal. But what if that empty container could meet the needs of an exporter in the region? The container could be transported to the export location and then sent back loaded to the port. This would also avoid the necessity of dispatching an empty container from the port to pick up an export load. The intent of the VCY is to reduce the vehicle miles of travel associated with the movement of empty containers.

   It has been estimated that approximately 2% of the import containers are currently taken directly to exporters. The goal of the VCY is to increase that percentage to at least 10%. The ports and ACTA hope to implement a VCY in 2005.

d) **Increased Use of On-Dock Rail Yards –** Approximately 18% of all containers moving through the Ports of Los Angeles and Long Beach are transferred to and from trains at "on-dock" rail yards; i.e., yards that are located on or very near the marine terminal. This is distinguished from yards that are "near-dock", such as the Intermodal Container Transfer Facility (ICTF), which is about 4.5 miles north of the ports, and "off-dock" rail yards located about 20 miles north of the ports near downtown Los Angeles.

   Increasing the use of on-dock yards can reduce pressure on the freeway system, because containers that are loaded on-dock do not have to be trucked to more distant rail yards. To ensure port customers use on-dock intermodal rail to the fullest extent, the ports are investigating the following operational improvements:

   - work with the railroads to assure timely arrival of empty intermodal equipment and the availability of rail crews
   - work to improve the productivity of loading and unloading of rail cars
   - promote the use of "block swap" operations to maximize the number of rail cars loaded on dock
   - alter business practices to prevent storage of containers on rail lines at on-dock terminals.

In the long run, major improvements to rail infrastructure in the port area, particularly on the Long Beach side, will be required to accommodate increases in on-dock use. These improvements include new on-dock rail yards, additional storage tracks and arrival/departure tracks, and improved signaling and train control systems. However, these improvements will take longer than five years to implement.

e) **Shuttle Train Pilot Project –** About 82% of the containers using the Ports of Los Angeles and Long Beach are trucked. Those containers that are trucked to warehouses in the Inland Empire could conceivably be hauled by rail from cargo terminals to an inland rail yard, where they could be transferred to truck for a shorter dray to the warehouse. ACTA is actively promoting a "demonstration project" for this concept and hopes to have a system in operation by the end of 2005. The principal obstacle to short-haul rail is that it is more expensive than trucking, and would require a public subsidy at least for the short term.

f) **Short-Sea Shipping –** Short-sea shipping can provide an alternative freight traffic route via coastal waterways, and can be more fuel-efficient and cost-effective than highway or rail transportation. The Port of Hueneme is seeking to create a short-sea shipping or fast-ship terminal to facilitate this type of domestic waterborne shipping along the West Coast.

Environmental Mitigations/Enhancements

All of the elements of the goods movement system – ships, port craft and equipment, trains, and trucks – are sources of pollutant emissions and may cause other environmental impacts, such as noise. These impacts affect communities near the ports, near distribution centers, and along transportation routes.

Port operations are a significant source of emissions in Southern California, and all three ports are expected to experience dramatic trade growth in the coming decades. Key pollution reduction initiatives at the Ports of Los Angeles and Long Beach include:

a) **Alternative Maritime Power ("Cold-ironing")** – This program evaluates the potential for on-shore electrical power for ships at berth in lieu of using their onboard diesel engines to generate electrical power. This can be a cost-effective strategy for certain vessels, and is being implemented by the Port of Los Angeles and is anticipated at the Port of Long Beach.

b) **Vessel Speed Reduction Program** – This is a voluntary program for ships to reduce speed to 12 knots within 20 miles of the harbor, which results in substantial fuel consumption and fuel cost savings, and associated emission reduction benefits. This program has been in effect since 2001, and is thought to have reduced NOx emissions by an estimated one to two tons per day, out of an estimated 50 tons per day produced by all ships (including cargo vessels) and commercial boats at the two ports.

c) **Vessel Retrofit Program** – This program seeks to implement cost-effective technology retrofits such as in-line fuel emulsifiers, slide valves, and Marine Diesel Oil.

d) **Smoke Stack Emissions Program** – This program involves Harbor Patrol observation and reporting to the South Coast Air Quality Management District (SCAQMD)[11] of excessive smoke and soot emissions from ships.

e) **Particulate Fallout Program** – This project reduces fugitive dust fallout from petroleum coke operations.

f) **Harbor Department Fleet Conversion** – This program involves use of hybrids, clean diesel fuels, engine retrofits, and alternative fuels (e.g., LPG or CNG) for fleet vehicles (street sweepers, patrol cars, etc.)

g) **Diesel Emission Reduction Program** – This program has two components: encouraging the use of emulsified diesel fuel in port terminal equipment, so as to permit the retrofit of port terminal equipment with Diesel Oxidation Catalysts. This involves providing incentives for the use of emulsified diesel fuel and installing diesel oxidation catalysts (DOCs) on terminal equipment. The specific fuel selected for this program is verified by CARB to reduce NOx by 14% and PM by over 60%. Diesel Particulate Filters (DPF) and Selective Catalytic Reduction (SCR) technologies are now permitting both NOx and PM emission reductions from diesel engines. Accelerating their adoption will prove beneficial in the control of port-related emissions.

h) **Liquefied Natural Gas (LNG) Yard Hostler Project** – This is a pilot project to determine the feasibility of using LNG for terminal yard hostlers, the small tractors that move containers on chassis within the terminal.

i) **Clean Diesel Fuel for Construction Equipment Program** – This program requires all construction equipment fueled on-site to use ultra-low sulfur diesel fuel.

j) **Switch Locomotive Fleet Replacement Program** – The ports, along with the Carl Moyer Program, are negotiating with Pacific Harbor Line (PHL), the railroad that performs local switching in the harbor area, to replace PHL's locomotive fleet with cleaner locomotives. Once the agreements have been implemented, it is expected that the entire fleet of switch locomotives can be replaced with more efficient machinery within a two-year period, resulting in a reduction of NOx emissions by approximately 70 percent. An experimental program is testing the effectiveness of hybrid locomotive engines, in place of conventional diesel.

Outside the ports, other local initiatives are contributing to the immediate reduction of goods movement impacts on air quality.[12]

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[11] The Port of Hueneme is in a different air basin and is regulated by the Ventura County Air Pollution Control District, not by SCAQMD.

[12] Ventura County is not a part of the SCAQMD, but is under the regulation of the Ventura County Air Pollution Control District (VCAPCD). As such, only state, federal and or VCAPCD rules and programs are applicable to Ventura County and the Port of Hueneme.

a) **Diesel Truck Fleet Modernization** – The Gateway Cities Clean Air Program provides financial incentives in support of diesel truck fleet modernization and improvements to off-road commercial vehicles. This pilot program began in 2002 and receives funding support from U.S. Environmental Protection Agency (EPA), CARB, the Port of Long Beach, the Port of Los Angeles, and the SCAQMD.

   The fleet modernization program compensates owners of 1986 or older trucks when they buy a 1999 or newer used diesel truck that is more reliable, cleaner, and fuel-efficient. An average grant is between $20,000 and $25,000, reducing the cost of converting to lower-emitting and cleaner trucks by about 60%. Preference is given to truck owners engaged in port-related goods movement. In general, each truck modernization grant generates a 50% reduction in NOx emissions and a 80% reduction in PM emissions. The program is expected to reduce NOx and PM emissions by an estimated 340 tons and 85 tons additional per year, respectively, over the next five years. The off-road vehicle improvement program, operating in conjunction with the Port of Long Beach Healthy Harbor Initiative, focuses on retrofitting diesel terminal equipment with diesel oxidation catalysts, which can reduce particulate matter emissions by 25 percent. This program is expected to reduce NOx emissions from off-road equipment by some 20-30 tons per year and PM emissions by about 3.5-4 tons per year, resulting in an estimated 20% reduction in NOx emissions and a 50% reduction in PM emissions.

   The current pilot program is anticipated to replace about 500 trucks, reducing NOx by about 1.07 tons per day and PM by about 0.24 tons per day. The program hopes to expand its scope to target a goal of replacing 50% of the pre-1983 heavy-duty trucks in Los Angeles County, replacing about 3,000 trucks in all. This fleet modernization strategy has an estimated cost-effectiveness of $7,200 to $ 9,000 per ton of NOx emissions reduced. This goal would require a funding level of $84.5 million, of which $13.86 million have already been raised.

   At the state level, CARB's Carl Moyer Memorial Air Quality Standards Attainment Program is providing funds to help speed up the introduction and use of low-emission heavy-duty engines. A wide array of goods movement equipment is eligible for the program, including cleaner on-road, off-road, marine, locomotive, forklifts, and airport ground support equipment. The program achieves near-term reductions in emissions of oxides of nitrogen (NOx) by incentivizing the incremental cost of cleaner-than-required engines and equipment.

b) **Rail-Highway Grade Crossing Separations** – Investments in numerous grade crossing separations, such as those accomplished by the Alameda Corridor project and continuing with the Alameda Corridor East, provide environmental benefits. The Alameda Corridor separations reduced train emissions up to 28 percent, reduced emissions from idling cars and trucks up to 54 percent, and cut noise pollution from trains 90 percent.

Unfortunately, there are some air pollution issues that are beyond the direct control of the region, the states and even the United States. The International Maritime Organization (IMO) regulates pollution from ocean-going vessels. The IMO approved MARPOL Annex VI in

September 1997, which calls for lower emissions from ships and also provides for the adoption of Sulfur Emission Control Areas (SECA). A SECA would require ships to use low-sulfur fuel within the SECA. However, the U.S. Senate has not yet adopted MARPOL Annex VI. The U.S. EPA needs to make a case for MARPOL Annex VI and the establishment of a SECA. Once the U.S. adopts MARPOL Annex VI, the IMO could approve a SECA for the west coast of the U.S. or preferably for the entire U.S. Without a SECA, it may be very difficult to achieve "no net increase" in emissions in the port area.

System/Physical Enhancements

In general, shorter-term infrastructure investments are those reflected in the 2004 Regional Transportation Improvement Program (RTIP), which programs transportation funds for the coming six years. Longer-term investments (out to 2030) are included in the 2004 Regional Transportation Plan (RTP).

a) **Truck Climbing Lanes –** Truck climbing lanes are additional uphill lanes on the outside of a freeway that allow slow-moving trucks to proceed safely without disrupting the flow of other traffic. Short-term projects in the 2004 RTIP include nearly $440 million worth of truck climbing lane projects in Riverside and San Bernardino Counties. The 2004 RTP includes additional truck climbing lanes on four routes in Orange, Riverside, and San Bernardino Counties, with implementation dates ranging from 2010 to 2030.

b) **I-710 Corridor/Desmond Bridge Gateway Program** – The I-710/Desmond Bridge Gateway Program is a comprehensive, strategic approach to addressing the congestion, air quality, and safety issues in the Corridor between the Ports of Long Beach/Los Angeles and State Route 60. The I-710 and Gerald Desmond Bridge carry approximately 15% and 10% of all U.S. waterborne container volume, respectively. The I-710/Desmond Bridge Program consists of the Gerald Desmond Bridge Replacement and the Locally Preferred Strategy for the I-710 Corridor, which includes dedicated truck lanes parallel to the mainline. The estimated total cost for the Desmond Bridge is $711 (escalated) and $4.5 billion for the I-710 Corridor component. This program will take at least ten years to implement.

c) **Alameda Corridor East (ACE) and Other Grade Separations –** Another critical step in goods movement is reducing conflicts between trains and motor vehicles by separating at-grade crossings. Like the Alameda Corridor, the ACE project seeks to speed freight bound eastward through the region by eliminating grade-crossing conflicts through the San Gabriel Valley, Orange County, and the Inland Empire. The total cost of this effort is approximately $2.5 billion. Short-term efforts in the 2004 RTIP include a total of $873 million dedicated to grade separation projects that will begin in the next six years. The remainder of the work will proceed in the mid- and long-term as funds become available.

d) **Port Infrastructure Projects To Improve Rail Operations –** Through their Ports Rail Master Plan, the Ports of Los Angeles and Long Beach have developed plans for track and signal improvements throughout the harbor area through 2020. These plans include additional on-dock yards, Centralized Traffic Control, additional storage tracks, longer arrival and departure tracks, bridge improvements and related facilities to accommodate expected increases in rail traffic. Relatively minor projects like track connections are planned for the next two years; additional on-dock rail yards and expansions of existing yards are planned within 5 years; and large-capacity "mega-terminal" yards will be completed between five and fifteen years into the future.

e) **New Intermodal Facilities** – The region is facing a shortage in intermodal rail yard capacity. Already the Burlington Northern & Santa Fe Railway Company (BNSF) has placed limits on the number of containers it will accept at Hobart Yard near downtown Los Angeles. It has been estimated that by 2020 there could be a region-wide shortage of 9 million lifts (domestic and international) per year.

Most of the responses to the growing need for intermodal lift capacity could take more than five years to complete. In the near-term, the Port of Los Angeles has adopted an Intermodal Rail Policy that "provides for on-dock and comparable near-dock intermodal facilities for shippers, carriers, terminal operators and Class I Railroads." The Port proposes to construct a new near-dock rail yard immediately south of the existing ICTF, using private funds. The new yard would accommodate 1,000,000 to 2,000,000 TEUs per year (540,000 to 1,100,000 lifts per year). Such a facility could eliminate one million truck trips annually from the 710 Freeway, employ between 800 and 1,000 people, and better utilize the Alameda Corridor.

Other potential developments include inland rail yards at the sites of the former George and Norton Air Force bases in Victorville and San Bernardino, respectively. Another yard has been proposed on privately owned land in Devore near the intersection of the I-15 and I-215 freeways. These yards could accommodate local shuttle trains, or "block swap" operations. New intermodal facilities in the Imperial Valley would accommodate the 530,000 current annual truck crossings at the Calexico East POE and relieve the congestion expected to occur as a result of future growth. Total truck crossings through all California POE's are projected to increase from 2 million per year to 5.6 million per year in 2030.

f) **New Freight Rail Capacity** – Given increased freight and passenger rail traffic, mainlines east of Los Angeles will need to be triple- and sometimes quadruple-tracked in the coming years. Bottlenecks such as the rail-to-rail Colton Crossing must also be addressed. Long-range projects in the 2004 RTP include provisions for a regional rail capacity improvement program totaling $3.4 billion, which provides for both additional track capacity and mitigations in the form of grade separation projects.

The reopening of the Carrizo Gorge Railway between San Diego and Imperial County provides another outlet for accommodating an increase in regional freight rail traffic. Additional improvements for this railway are incorporated into short-term and long-term plans.

g) **New Toll-Funded Roadway Improvements to Address Truck Demand –** Recognizing the need for additional highway capacity to handle increased truck as well as passenger traffic, the 2004 RTP explores the long-range strategy of dedicated facilities to accommodate truck traffic. The RTP includes proposals for several new toll-funded corridors in the region, including on the I-710, the I-15, and on east-west routes to be determined. A prior study showed that a dedicated truck facility would be feasible on SR-60. In line with the principles stated earlier, community impact mitigation will be an integral part of these projects.

h) **Land Use Changes** – The adopted 2004 RTP was developed with input from the regional growth visioning process known as Southern California Compass. The Compass vision showed that a departure from the usual growth and land use patterns could yield substantial benefits to the region in the form of reduced traffic congestion and reduced time lost in travel delays. The further development of this vision has been termed the "2% Strategy," in reference to the small percentage of the region's land area where local land use practices would need to change to reap these benefits. Implementation of the 2% Strategy at the local level can be combined with the development of new goods movement infrastructure so that growth is accommodated with reduced impacts and with greater local and regional economic benefit.